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THE FED HOG BASIS IN OHIO, 1972-1980

By

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The trading of fed hog futures presents Ohio hog producers with the opportunity to hedge their production. When a producer hedges his/her production, he/she sells a futures contract, usually the one closest to but following the expected date on which the hogs will be sold. Normally, to complete the hedge, the futures contract is bought back when the hogs are sold. The net price resulting from this production hedge equals the futures price at which the hedge was placed, minus the futures price at which the hedge was lifted, plus the cash price at which the hogs were sold. Subtracting the cost of production from this net price yields the profit or loss from raising the hogs.

A slightly different view of the net price resulting from the production hedge discussed above can be obtained when it is recognized that the futures price at which the hedge was lifted minus the cash price equals the basis. Thus, the net price resulting from the production hedge equals the futures price at which the hedge was placed minus the basis. Consequently, once the production hedge is placed, the only unknown in determining the net price is the basis.

The basis is not constant but varies from year to year for the same day. Therefore, the net price resulting from the production hedge is never known until the hedge is closed out. However, at the time the decision to hedge is being made, a producer needs some idea of what the basis will be when the hogs are to be sold. Otherwise, a sound judgement about the net price resulting

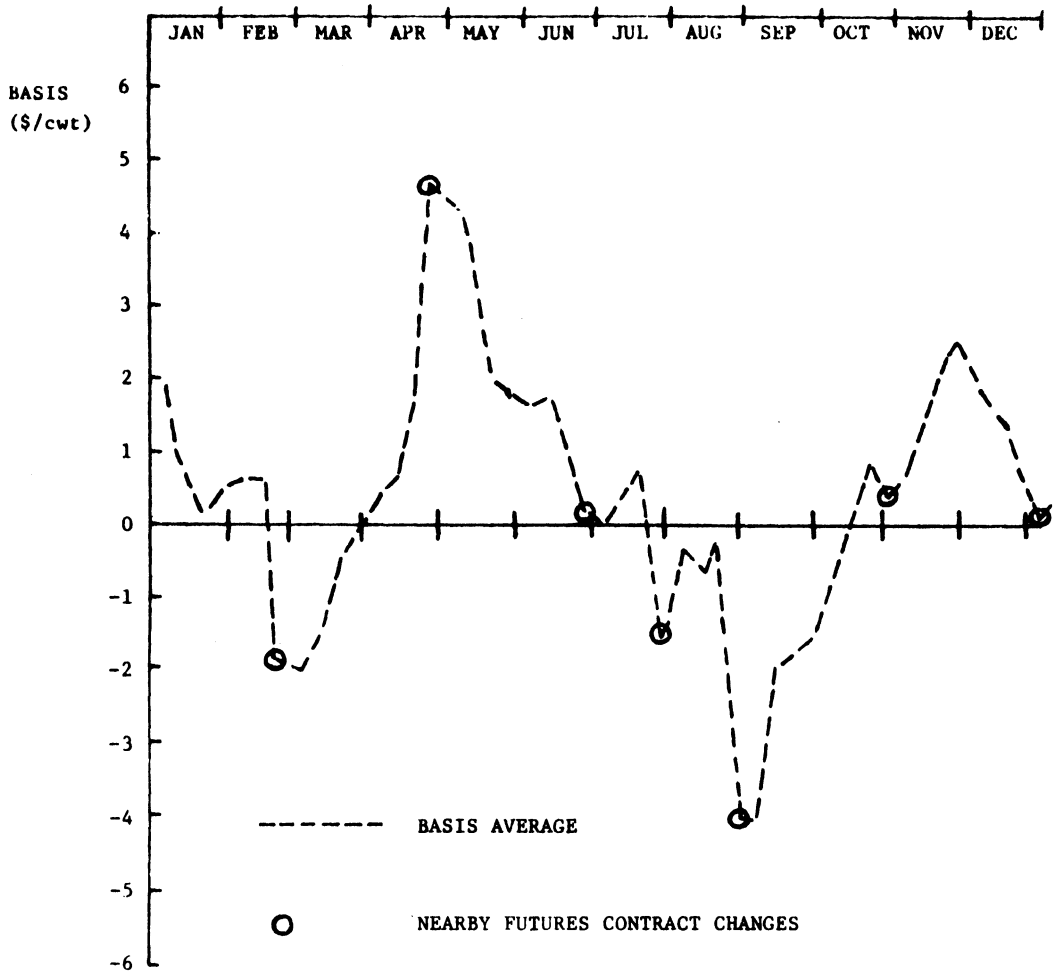
from the production hedge cannot be formed. Generally, the best indicator of what the basis will be on the date the hogs are expected to be sold is the average of past bases on that date.

A recent study at Ohio State University has compiled an average fed hog basis for Ohio over the 1972-1980 period. This study used for the cash price the high quote on the price range reported by the Ohio Department of Agriculture for U.S. number one and two barrows and gilts, 200-230 pounds, at country points. This price is an average for 11 order buyers and packers scattered throughout Ohio and thus is a direct market price. Also collected was the opening nearby futures price for the same day the cash price was collected. Therefore, the basis was calculated as the opening nearby futures price minus the corresponding cash price. This basis is the one needed to estimate an expected net price resulting from the production hedge described above.

Since the cash price could be readily obtained only for Friday's, prices were collected only for that day. Consequently, to allow comparisons across years, the Friday dates were grouped into four weekly time periods: days 1-7, 8-14, 15-21, and 22-31 of a month. An average was used if two Friday's fell in the 22-31 period. Therefore, the cash basis was computed for 48 weekly time periods. Lastly, since futures contracts are traded for February, April, June, July, August, October, and December delivery, seven contract changes were necessary to compile a continuous nearby basis. These changes were made during the third week period of the delivery month for the futures contracts.

Using the above described data, Figure 1 presents the average basis for the 48 weekly time periods. Clearly, a seasonal pattern existed during the 1972-1980 observation period. The cash exceeded the futures price, on average, during the summer months and from late February to late March.

FIGURE 1: Futures-Cash Basis for Ohio Direct Hog Market, Average and Standard Deviation, 1972-1980.[a,b]



[a]Cash prices used were the high quote on the price range for U.S. number one and twos, 200-230 pounds, at country points. Futures prices used were the opening quote. Basis equals futures minus cash.

[b]Prices were collected only for Friday or the nearest available date. To allow comparisons across years, the Friday dates were grouped into four periods: days 1-7, days 8-14, days 15-21, and days 22-31 of a month. If two days fell in the 22-31 period, the average was used.

Sources: Chicago Mercantile Exchange Yearbook, 1971/72-1978/79.
Ohio Federal-State Newsletter, 1972-1980.
The Wall Street Journal, April 1979-December 1980.

During the other months, the futures exceeded the cash price on average. The cash exceeded the futures by the widest margin during August and September while the futures exceeded the cash by the widest margin during April and May. Note, that the basis pattern tends to resemble the seasonal pattern of fed hog marketings. Periods of relatively small marketings are associated with the cash price exceeding the futures price while periods of relatively large marketings are associated with the futures price exceedings the cash price.

Given the average basis described above, how would a producer use it in a hedging program? As discussed, the net price resulting from a production hedge equals the futures price at which the hedge was placed minus the basis when the hedge was lifted. The latter is not known at the time the decision on whether to hedge or not is being made. In its place, the average presented above can be used to obtain an indication of the net price likely to result from the production hedge.

To illustrate the above discussion, consider a producer who is deciding whether or not to hedge hogs that are expected to be sold during the second week of May. The June futures is the contract closest to but following the expected sell date. Assume that this futures is selling for $50 a hundredweight. From Figure 1, the average basis during the second week of May is approximately $4. Thus, the net price likely to result from the production hedge is $50 minus $4 or $46.

Whether this producer hedges or not depends on his cost of production, his view on potential changes in the price of the June futures, and his financial position. However, a decision cannot be made until a reasonable estimate is made of the net price likely to result from the hedge. This need is met by using the average of previous bases for the expected sell date.

In conclusion, two points of caution should be injected. First, the average basis only provides an indication of what the basis will be when the hedge is lifted. The actual basis at the time the hedge is lifted will not usually equal the average. The resulting divergence implies that the net price resulting from the production hedge may be more favorable or less favorable than that expected from the average basis. This variation should be remembered when evaluating a production hedge. Secondly, the basis presented above may not be the basis any individual producer in Ohio faces since it was constructed from an average cash price for the state. Thus, differences in the basis between different localities in the state could not be analyzed. Consequently, each producer should build his own cash basis based on his own experiences. In the meantime, the average basis values presented in Figure 1 can serve as a reasonable guide in a production hedge decision.